request reexamination and reconsideration of the application in view of the preceding amendments and the following remarks. The amendments presented above contain no new matter and raise no new issues.

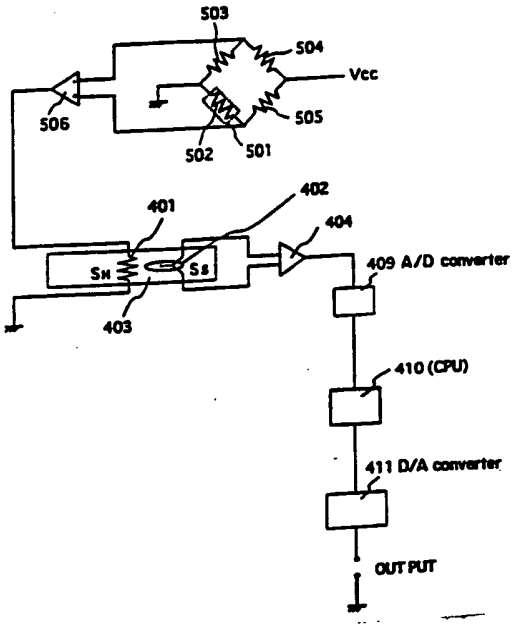
The applicants appreciate that Examiner's approval of the applicants' proposed drawing correction for Fig. 1, and upon allowability of the claims, corrected formal drawings will be provided by the applicant. It is understood by the applicants, pursuant to a conversation between the applicant's representative and the Examiner on January 7, 2003, that formal drawings need not be provided at this time.

The Examiner rejects claims 1-17 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,629,482 to *Vaitkus et al.* in view of U.S. Patent No. 4,722,611 to *Hultgren*. The Examiner also rejects claims 1-17 under 35 U.S.C. §103(a) as being unpatentable over *Vaitkus et al.* in view of U.S. Patent No. 5,918,473 to *Gendron et al.*

In pertinent part, the Examiner states that *Vaitkus et al.* discloses a temperature dependent resistor device 502, a first circuit including a first reference resistance leg, a first variable resistance leg 502-505 including the temperature dependent resistor device, first comparator 506 connected to both legs for determining when the temperature resistor device reaches a first temperature; and a second circuit including a second reference resistance leg 402, a second variable resistance leg 401 including the temperature dependent resistor device, a second comparator 404 connected to both legs; and a processor 410 connected to both the first and second comparators.

However, in contrast to the applicants' claim 1, however, the Examiner's cited embodiment, Fig. 6 of *Vaitkus et al.*, fails to disclose that the first variable resistance leg of the first circuit and the second variable resistance leg of the second circuit *both* include the

temperature dependent resistor device. Fig. 6 of *Vaitkus et al.* is reproduced below.



It is clear that the "temperature dependent resistor device" 502 is included in the "first circuit", but is <u>not</u> included in the "second circuit".

Further in contrast to the applicants' claim 1, *Vaitkus et al.* fails to disclose "a processor connected to <u>*both*</u> the first and second comparators". See Fig. 6 of *Vaitkus et al.*, where "first comparator" 506 is not connected to the processor 410, but rather is connected to the second circuit.

Also, as noted by the applicants in an earlier Response, the embodiment in Fig. 4 of *Vaitkus et al.* teaches two identical thin films/sensors, and <u>each one</u> is a temperature dependent device. See, <u>e.g.,</u> *Vaitkus et al.* at column 16, lines 22-23, as well as column 3, lines 1-24, 48-53, and Fig. 1. *Vaitkus et al.* then places one thin film/sensor in a fluid and one out of the fluid so that the output of each sensor differs only relative to the flow rate. The <u>differences between *two* temperature dependent devices</u> placed in different environments is determined. Also, *Vaitkus et*

DGR-102J
TET:ci

al. does not disclose, teach or suggest the use of the period of time it takes for the temperature change in a temperature dependent device as a way of determining the heat loss rate. Indeed, the Examiner has previously admitted that, in contrast to the applicants' claimed invention, "*Vaitkus et al.* does not disclose a time period that it takes the temperature dependent resistor device to change from a first temperature to a second temperature to determine the heat loss rate of the temperature dependent resistor device".

Moreover, as noted previously, *Vaitkus et al.* teaches away from the applicants' claimed invention in that *Vaitkus et al.* requires an analog to digital converter 409. See *Vaitkus et al.* column 10, lines 45-48 and column 17, lines 1 and 2, as well as Fig. 4. One of the objects of the applicants' claimed invention is to provide an air flow sensor which does not require an (expensive) analog to digital converter. See, e.g., the specification at page 4, lines 19-21, as well as page 5, lines 11-22.

Also, neither *Hultgren* nor *Gendron at al.*, the other references cited by the Examiner, disclose, teach or suggest all of the elements of applicants' claim 1. Thus, it is clear that the cited combination of *Vaitkus et al.*, *Hultgren* and *Gendron et al.* does not disclose teach or suggest all of the elements of the applicants' claim 1. Accordingly, claim 1, and claims 2-10 that depend from claim 1, are in condition for allowance for that reason.

Additionally, the cited references do not disclose all of the elements of the applicants' dependent claims 2-10, for example:

> -the first variable resistance leg includes a low impedance resistor connected in series with the temperature dependent resistor device and the first reference resistance leg includes a plurality of resistors connected in series, the first reference resistance leg connected in parallel with the first variable resistance leg, as claimed in claim 3;
>
> -the second reference resistance leg includes a plurality of resistors connected in series and the second variable resistance leg includes a high impedence resistor connected in series with the temperature dependent resistor device, the second reference resistance leg

connected in parallel with the second variable resistance leg as claimed in claim 4;

-a first switch connected between a voltage source and the first circuit, the processor progammed to close the first switch until the temperature dependent resistor device reaches the first temperature and to then open the first switch as claimed in claim 5;

-a second switch connected between a voltage source and the second circuit, the processor further programmed to close the second switch after the temperature dependent resistor device reaches the first temperature as claimed in claim 6;

-an ambient temperature sensing circuit including the temperature dependent resistor device as claimed in claim 7;

-the ambient temperature sensing circuit includes a reference resistor and a capacitor connected in series with the temperature dependent resistor device as claimed in claim 8;

-the processor connected on a first line between the reference resistor and the capacitor and on a second line between the capacitor and the temperature dependent resistor device as claimed in claim 9;

-the processor programmed to apply a voltage on the first line and to detect the voltage on the second line until it reaches a predetermined level and to then apply a voltage on the second line and to detect the voltage on the first line until it reaches the predetermined level as claimed in claim 10.

Thus, because the cited references do not teach the combination of elements in applicants' dependent claims 2-10, claims 2-10 are also allowable for this reason.

The Examiner also states that *Hultgren* and *Gendron et al.* each disclose a time period that it takes the temperature dependent resistor device to change from a first temperature to a second temperature to determine the heat loss rate of the temperature dependent resistor device, presumably referring to each of the applicants' independent claims 1, 11 and 14.

As noted above, none of the cited references teach all of the elements of the applicants' claim 1.

With respect to claim 11, as amended claim 11 recites an air flow sensor comprising a temperature dependent resistor device, means for applying a voltage to the temperature

dependent resistor device until it reaches a first temperature including a first switch connected between a voltage source and a first circuit, means for determining when the temperature dependent resistor device then cools to a second, lower temperature including a second switch connected between a voltage source and a second circuit, and means for timing the period of time it takes the temperature dependent device to change from the first temperature to the second temperature to determine the heat loss rate of the temperature dependent resistor device.

In contrast to applicants' claim 11, neither *Hultgren* nor *Gendron et al.* (nor *Vaitkus et al.*) disclose, teach or suggest means for applying a voltage to the temperature dependent resistor device until it reaches a first temperature including a first switch connected between a voltage source and a first circuit, means for determining when the temperature dependent resistor device then cools to a second, lower temperature including a second switch connected between a voltage source and a second circuit, and means for timing the period of time it takes the temperature dependent device to change from the first temperature to the second temperature to determine the heat loss rate of the temperature dependent resistor device.

Vaitkus et al. discloses a single switch (see, e.g. Fig. 4) and does not disclose a time period that it takes the temperature dependent resistor device to change from a first temperature to a second temperature to determine the heat loss rate of the temperature dependent resistor device.

Hultgren discloses a bridge circuit, and teaches applying a voltage across a thermistor in the bridge circuit for a predetermined time period (as opposed to timing the period of time it takes the temperature dependent device to change from the first temperature to the second temperature), then comparing the voltage output after the thermistor is placed in first a reference liquid and then in an unknown test liquid. It is notable that in contrast to the applicants' claim

11, *Hultgren* further teaches that each test is conducted for the same amount of time which is controlled by the timer, the timer controlling the duration of time voltage is applied. See the *Hultgren* Abstract. See also *Hultgren* at col. 7, lines 47-50, col. 12 lines 55-59, and col.13, line 65 through col. 14, line 5.

Gendron et al. discloses power supply 11. *Gendron et al.* does not disclose, *inter alia*, means for applying a voltage to the temperature device until it reaches a first temperature including a first switch connected between a voltage source and a first circuit and means for determining when the temperature dependent resistor device then cools to a second lower temperature including a second switch connected between a voltage source and a second circuit.

Furthermore, *Gendron et al.* teaches heating a probe in a gas to a predetermined temperature, immersing the probe into a sample, and measuring the electrical response for a predetermined measurement period. Then, *Gendron et al.* compares the measured electrical response to a response of a reference liquid measured under equivalent conditions to determine the quenchability property of the liquid coolant. See the *Gendron et al.* Abstract. In further contrast to the applicants' claim 11, *Gendron et al.* does not teach or suggest measuring the time period it takes the temperature dependent resistor device to change from a first temperature to a second temperature in order to determine the heat loss rate of the temperature dependent resistor device.

Accordingly, independent claim 11, and claims 12 and 13 which depend from claim 11, are in condition for allowance.

With respect to independent claim 14, as amended claim 14 recites a method of determining the heat transfer rate of a temperature dependent resistor device, the method comprising heating the temperature dependent resistor device to a first temperature by applying a

first voltage across the temperature dependent resistor device until it reaches a first resistance value, allowing the temperature dependent resistor device to cool to a second temperature by applying a second, lower voltage across the temperature dependent resistor device until it reaches a second resistance value, measuring the period of time it takes for the temperature dependent resistor device to cool to the second temperature including monitoring when the temperature dependent device reaches the first resistance value and timing the period it takes to reach the second resistance value, and calculating the rate of heat transfer of the temperature dependent resistor device based on the measured period of time.

In contrast to applicants' amended claim 14, *Hultgren* discloses applying voltages to the thermistor for fixed periods of time and without monitoring when the temperature dependent resistor device reaches the first resistance value and timing the period it takes to reach a second resistance value. *Vaitkus et al.* does not disclose a time period that it takes the temperature dependent resistor device to change from a first to a second resistance value to determine the heat loss rate of the temperature dependent resistor device and does not disclose applying first and second voltages and monitoring as claimed in applicants' claim 14. *Gendron et al.* discloses a heating step by applying a heating current, without the steps of applicants' claim 14. Accordingly, claim 14 is in condition for allowance.

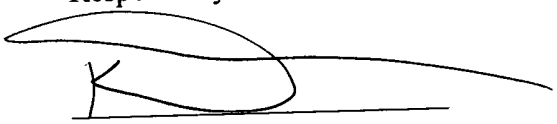
CONCLUSION

Accordingly, claims 1-14 are in condition for allowance. Each of the Examiner's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that the application is in condition for allowance. Early and favorable action is respectfully requested.

DGR-102J
TET:ci

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates, collect in Waltham, Massachusetts at (781) 890-5678.

Respectfully submitted,



Kirk Teska
Reg. No. 36,291

DGR-102J
TET:ci